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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/588,788

06/06/2000

Heng-Ming Hsu

67,200-262

9280

7590

10/31/2003

Tung & Associates  
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EXAMINER

TUGBANG, ANTHONY D

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/588,788

Applicant(s)

HSU ET AL.

Examiner

A. Dexter Tugbang

Art Unit

3729

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 4-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. The applicants' amendment filed 8/12/03 (Paper No. 15) has been fully considered and made of record.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities: the phrase of "spiral planar spiral" (two occurrences at lines 3-4) is awkwardly worded. The examiner suggests removing at least one of the terms of "spiral" from each of the occurrences. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. Claims 1, 2, 4-6, 8 and 16 rejected under 35 U.S.C. 102(b) as being anticipated by Romankiw et al 4,295,173.

Romankiw discloses a method of fabricating an inductor structure comprising: providing a substrate 20 (in Fig. 1A); forming over the substrate a single spiral planar conductor 10 (in Fig. 1B) to form a single spiral planar inductor, wherein the successive series of spirals is formed with a continuous variation of a series of linewidths (10a-10h).

Regarding Claim 2, Romankiw inherently has an enhanced Q value to the extent that the planar spiral conductor is fabricated in a series of linewidths.

Regarding Claims 4 and 5, Romankiw teaches that the spirals are formed in a shape of a rectangle (as shown in Fig. 1B) with the conductor material is non-magnetic (see col. 2, lines 43-46).

Regarding Claims 6, 8, and 16, the spirals formed by the conductor are shown (in Fig. 1B) to have a “comparatively narrow linewidth” at a portion of the spiral closer to the medium M and a “comparatively wide linewidth” with a greater thickness than the “comparatively narrow linewidth” at the portion of the spiral furthest away from the medium M. One spiral 10 is comprised of at least 4 spirals where the variation is progressively increasing and decreasing with at least one of the spirals.

5. Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Wollnik.

Wollnik discloses a method of fabricating an inductor structure comprising: providing a substrate (insulator in Fig. 9); forming over the substrate a planar spiral conductor (copper) to form a planar spiral inductor with successive spirals of the planar spiral conductor formed in a continuous variation (see Fig. 8) of a series of linewidths of the successive series of spirals, which meets all of the limitations of the claimed method. Wollnik inherently has an enhanced Q value to the extent that the planar spiral conductor is fabricated in a series of linewidths.

***Claim Rejections - 35 USC § 103***

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Romankiw et al in view of Ohmura et al 4,392,013.

Romankiw discloses the claimed fabrication method as previously discussed. Romankiw does not specifically mention the specific ranges defined in Claim 7 for the comparatively narrow linewidth and comparatively wide linewidth.

Ohmura teaches different linewidths for spiral conductors with one range of 0.1-10  $\mu\text{m}$ , which is inclusive of the claimed range of 7-10 microns for the comparatively narrow linewidth, and another range of 34.9-190  $\mu\text{m}$  for a comparatively wide linewidth. The benefits of the variation of linewidths allows formation of the spiral conductors to occur free from short circuiting with high reliability (see col. 1, lines 62-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made formed the spiral conductors of Romankiw with the linewidths taught by Ohmura, to positively form spiral conductors free from short circuiting and with high reliability.

With respect to the comparatively wide linewidth having a width in the range of 17-21 microns, this claimed range is considered to be an effective variable within the level of ordinary skill in the art of forming spiral conductors and it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a range for the comparatively wide linewidth of between about 17-21 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

#### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1, 4-8 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 3729

Regarding Claim 2 and the merits of Wollnik, the applicants' contend that Wollnik does not teach any enhanced Q value. The examiner's position is that Wollnik inherently has an enhanced Q value to the extent that Wollnik clearly teaches a variation in linewidths of the spirals and that during operation, electrical current flows through the spiral to produce an enhanced inductive Q value.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

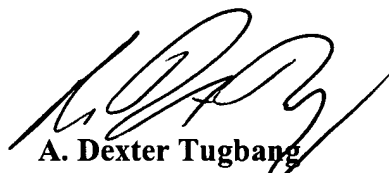
Art Unit: 3729

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599.

The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.



**A. Dexter Tugbang**  
**Primary Examiner**  
**Art Unit 3729**

October 27, 2003